

## LINKS BETWEEN COGNITIVE DISTORTIONS AND COGNITIVE EMOTION REGULATION STRATEGIES IN NON-CLINICAL YOUNG ADULTHOOD

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### Abstract

The cognitive content-specificity hypothesis, based on Beck's cognitive theory (1976), suggests that automatic thoughts and emotional status are positively related. Cognitive distortions, which involve erroneous information processing, and cognitive emotion regulation strategies, which are strategies implemented at the cognitive level to modulate the emotional response, could be linked. The objective of this study was to study these relationships between cognitive distortions (positive/negative) and cognitive emotion regulation strategies (adaptive/non-adaptive) in a non-clinical young adult population. 96 participants (age 18-39 years; 48 men; 48 women) completed the French version of the Cognitive Emotion Regulation Questionnaire and the French Cognitive Distortions Scale for adults, a recent tool to quantify the behavioural expression of the presence of cognitive distortions in individuals' usual reasoning, using a dichotomy between positive/negative poles, according to the Franceschi's model (2007, 2008). Negative distortions were positively correlated with the use of non-adaptive strategies of cognitive emotion regulation, while positive distortions were negatively correlated with the use of adaptive strategies. The main distortion linked to the use of non-adaptive strategies was selective abstraction, while those linked to the use of adaptive strategies were positive dichotomous reasoning, positive neutral omission, and minimization. The results obtained make it possible to consider the possibility that there may be interaction profiles between the presence of cognitive distortions in individuals' usual reasoning and the use of cognitive emotion regulation strategies. Cognitive distortions interfere with adaptive and non-adaptive strategies in a non-clinical young adult population. Mental health cannot therefore be characterized by the absence of cognitive distortions and the use of only adaptive strategies of cognitive emotion regulation.

**Keywords:** *Cognitive emotion regulation, cognitive distortions, information processing, young adulthood, cognitive content.*

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### 1. Introduction

Cognitive distortions, introduced by Beck (1964) in his work on depression, refer to attitudes, thoughts and beliefs, false or erroneous, that lead the individual to perceive events inappropriately and attribute negative meanings to their experiences (Kendall, 1991). Varying numbers and types of cognitive distortion have been identified and recognized by different authors (Kramer & Drapeau, 2011). However, Franceschi (2007, 2008) proposed a model based on the classic classification of the cognitive distortions identified by Beck, specifying the relationships between them. This conceptual model is based on three notions: the reference class, which consists of a set of events, phenomena, objects, or stimuli in general; duality, which makes it possible to characterize an event of the reference class according to a dichotomy between 2 poles (positive/negative, internal/external, collective/individual, etc.); and the taxon system, which refers to an individual-specific classification of elements of the reference class in relation to each other according to a given duality. Franceschi (2007) also defined cognitive distortions as general (dichotomous reasoning, maximization, minimization, arbitrary focus, omission of the neutral and requalification in the opposite pole) or specific, regarded as instances of general cognitive distortions (disqualification of the positive, selective abstraction, catastrophism). Even if the presence of cognitive distortions in normal reasoning is related to the development of mood disorders (Beck, 1995), behavioural disorders, such as pathological gambling (Barrault & Varescon, 2012), or personality disorders (Del Pozo, Harbeck, Zahn, Kliem & Kröger, 2018), they are not specific to a clinical population, and any individual is prone to produce reasoning bias (Pennequin & Combalbert, 2017).

It has frequently been shown that emotions and cognitive activity are linked, in both pathological and non-pathological populations (Krimbel, Nelson-Gray & Mitchell, 2012). The hypothesis of specific cognitive content, based on Beck's cognitive theory (1976), postulates that an individual's mood can be

characterized by a specific cognitive content. According to this hypothesis, the system of thought and emotional status would therefore be positively linked.

Introduced by studies in clinical psychology, emotion regulation refers to the set of extrinsic and intrinsic strategies implemented to reduce, maintain or increase emotion or emotional responses, and in particular their intensive and temporal characteristics (Gross, 2001). Concerning the conscious cognitive component of emotion regulation in Gross's model (1998), otherwise known as cognitive emotion regulation, a number of strategies have been observed, divided into two categories: adaptive strategies (i.e. those that allow a beneficial mode of functioning over the long term), and non-adaptive strategies (Garnefski, Kraaij & Spinhoven, 2001).

The relationship between cognitive distortions and cognitive emotion regulation has been emphasized by the study of the attention process. This process has been shown to be involved in information processing, and therefore in the presence of cognitive distortions (Franceschi, 2008), as well as in the cognitive emotion regulation process (Van der Linden, Rochat & Billieux, 2006). The relationship between cognitive distortions and cognitive emotion regulation has also been highlighted by studies of emotional disorders. Depression is characterized by a disruption of the emotion regulation process underpinned by excessive use of cognitive distortions (Joormann & Stanton, 2016).

To date, few studies have looked at the links between the presence of cognitive distortions in normal reasoning and the use of cognitive emotion regulation strategies in individuals in the general population (Robert, Combalbert & Pennequin, 2017). For this reason, this study proposes to explore the links between these different types of cognitive information processing in a non-clinical young adult population, using Franceschi's model to draw the profile of cognitive distortions, and to identify distortions likely to be most associated with the use of cognitive emotion regulation strategies. Based on previous results obtained from clinical populations, we made the general hypothesis that the type and frequency of cognitive distortions would influence the type of cognitive emotion regulation used by a non-clinical young adult population.

## 2. Method

### 2.1. Participants and procedure

The sample consisted of 96 participants from the general population, including 48 men ( $M = 25.17 \pm 5.48$  years) and 48 women ( $M = 24.79 \pm 5.73$  years), aged 18 to 39 ( $M = 24.98 \pm 5.58$  years). Average years of formal education was 13.93 ( $SD = 2.23$ ;  $13.92 \pm 2.21$  for men,  $13.94 \pm 2.26$  for women), which corresponds to a two year degree after the baccalaureate. None of the participants were receiving professional medical or psychological care. Each participant completed the Cognitive Emotion Regulation Questionnaire and the Cognitive Distortions Scale for adults, alone and in a quiet environment. Participants were informed that their responses would be anonymous. A single experimenter collected the data at the participants' homes. The order in which the tools were presented was counterbalanced. An Internet version of the form was also made available online, using the Google Forms application. Participants were instructed to find a quiet place to answer the questions; at the end of the form they were asked whether they had done so. No significant differences were found between the results of the paper and the Internet versions of the form (T-test carried out for each variable with  $p < .01$ ). The results were therefore aggregated. Time to complete the questionnaire was 15-20 minutes.

### 2.2. Measures

1- To assess the presence of cognitive distortions in the normal reasoning of individuals, we used the French Cognitive Distortions Scale for adults developed by Robert et al. (Robert, Combalbert, Pennequin, Deperrois & Ouhmad). This is a self-report questionnaire composed of 42 scenarios related to everyday life events, with suggestions about what individuals might think in a similar situation. For each scenario, participants assign a score to the corresponding proposal, ranging from (0) doesn't correspond at all to what I think to (10) corresponds absolutely to what I think. The cognitive distortions thus evaluated are: dichotomous reasoning (i.e. seeing events in black or white, without shades of gray, and hence perceiving a reference class only in relation to the extreme taxon of each pole), omission of the neutral (i.e. disregarding neutral aspects of events and seeing them only as positive or negative), disqualification of one pole (i.e. giving arbitrary preference to one pole to characterize the events of the reference class), requalification in the opposite pole (i.e. characterizing as negative an event that should objectively be seen as positive and vice versa), arbitrary focus (i.e. focusing on one event in the reference class while ignoring all others), minimization (i.e. assigning less significance to an event in the reference class than its objective importance), and maximization (i.e. assigning greater significance to an event in the reference class than its objective importance). Each cognitive distortion is targeted by 6 scenario/proposal pairs, 3 suggesting a positive distortion (i.e. carried out on the positive side of the spectrum), and the other 3 suggesting a negative distortion (i.e. carried out on the negative side of the spectrum).

The Cognitive Distortions Scale for adults has good internal consistency for each subscale, with an alpha coefficient of 0.67 to 0.87, and excellent internal consistency for the whole scale, with an alpha coefficient of 0.94 (Robert et al.).

2- The Cognitive Emotion Regulation Questionnaire, developed by Garnefski, Kraaij and Spinhoven (2001), is a 36-item self-report questionnaire designed to assess individuals' cognitive emotion regulation capacity. The French version was developed and validated by Jermann et al. (Jermann, Van der Linden, d'Acremont & Zermatten, 2006). This tool makes it possible to measure the preferential use of nine distinct cognitive emotion regulation strategies, in relation to what individuals think (and not what they do) following a negative and stressful life event. The strategies are divided into two categories: (1) adaptive strategies, including acceptance, positive refocusing, refocusing on planning, positive reappraisal (i.e. giving positive meaning to the event and drawing positive conclusions from it in terms of personal growth, for example), and putting into perspective, and (2) non-adaptive strategies, which include self-blame, blaming others, rumination, and catastrophizing. Participants rate the items on a Likert scale, ranging from (1) almost never to (5) almost always, according to what they think when confronted by a negative or unpleasant event. Each strategy is targeted by 4 items.

Each subscale of the French version of the Cognitive Emotion Regulation Questionnaire has good internal consistency, with an alpha coefficient of 0.68 to 0.87 (Jermann et al., 2006).

### 3. Results

There was no significant effect of age on any of the cognitive distortions and the cognitive emotion regulation strategies. We found a positive correlation between level of education and distortions: disqualification of one pole + ( $r = 0.35, p < .05$ ), requalification in the opposite pole + ( $r = 0.22, p < .05$ ), and arbitrary focus + ( $r = 0.34, p < .05$ ). T-tests also revealed an effect of sex on requalification in the opposite pole - ( $t(94) = 2.72, p < .01$ ) and on maximization + ( $t(94) = 10.27, p < .05$ ). Both types of distortion were found more among men than women. We found a positive correlation between level of education and acceptance ( $r = 0.22, p < .05$ ), and between level of education and catastrophizing ( $r = 0.23, p < .05$ ). We also observed an effect of sex on acceptance ( $t(94) = 2.20, p < .05$ ) and blaming others ( $t(94) = 3.04, p < .05$ ); men used both these strategies more than women.

We observed a positive correlation between negative distortions and the use of non-adaptive cognitive emotion regulation strategies ( $r = 0.33, p < .001$ ), and a negative correlation between positive distortions and the use of adaptive strategies ( $r = -0.23, p < .05$ ). We also analyzed the effect of cognitive distortions on the use of cognitive emotion regulation strategies using T-Tests. This enabled us to divide participants into 2 separate groups based on the overall score for the Cognitive Distortion Scale according to the standard defined by the tool ( $M = 144.21 \pm 36.94$ ): group 1 ( $N = 51, M = 117.59 \pm 18.46$ ) consisted of participants with scores below the standard, and group 2 ( $N = 45, M = 165.89 \pm 14.39$ ) consisted of participants with scores above the standard. The data show that participants in group 1 used adaptive cognitive emotion regulation strategies more than those in group 2 ( $t(94) = 2.49, p < .05$ ), and that there was no significant difference in the use of non-adaptive strategies ( $t(94) = -1.85, NS$ ).

In order to identify the cognitive distortions most associated with adaptive and non-adaptive cognitive emotion regulation strategies, we conducted two forward stepwise regression analyses (Table 1 & 2).

*Table 1. Steps of the forward stepwise regression concerning adaptive cognitive emotion regulation strategies for each cognitive distortion.*

Step	Variables	$\beta$	R <sup>2</sup>	F Change
Step 1	Dichotomous reasoning +	0.3464 *	0.1200	12.816 *
Step 2	Dichotomous reasoning +	0.3102 *	0.1200	12.816 *
	Minimization +	-0.2387 *	0.1757	9.909 *
Step 3	Dichotomous reasoning +	0.2445 *	0.1200	12.816 *
	Minimization +	-0.2533 *	0.1757	9.909 *
	Neutral omission +	-0.2337 *	0.2260	8.957 *
Step 4	Dichotomous reasoning +	0.2896 *	0.1200	12.816 *
	Minimization +	-0.2914 *	0.1757	9.909 *
	Neutral omission +	-0.2276 *	0.2260	8.957 *
	Minimization -	0.2010 *	0.2625	8.098 *

NS: Non-Significant; \*  $p < .05$

Concerning the use of adaptive cognitive emotion regulation strategies, the best model corresponds to step 4, which explained 26.25% of the score variance, and included dichotomous reasoning + (12% of the variance), minimization + (5.57%), neutral omission + (5.03%), and minimization – (3.65%).

*Table 2. Steps of the forward stepwise regression concerning non-adaptive cognitive emotion regulation strategies for each cognitive distortion.*

Step	Variables	$\beta$	R <sup>2</sup>	F Change
Step 1	Arbitrary focus –	0.3255 *	0.1059	11.139 *
Step 2	Arbitrary focus –	0.2486 *	0.1059	11.139 *
	Maximization –	0.1825 NS	0.1333	7.155 *

NS: Non-Significant; \* p < .05

Concerning the use of non-adaptive strategies, the best explanatory model is the one presented in step 1, explaining 10.59% of the score variance, composed of arbitrary focus.

#### 4. Discussion

The purpose of this research was to show that the type and frequency of cognitive distortions affect the type of cognitive emotion regulation used by non-clinical young adults in the general population. A further aim was to study which of the distortions identified by Franceschi (2007) are most associated with the use of adaptive and non-adaptive cognitive emotion regulation strategies.

According to our results with non-clinical adults, greater use of non-adaptive cognitive emotion regulation strategies is related to negative distortions in normal reasoning. By contrast, less use of adaptive cognitive emotion regulation strategies is related to positive distortions. More cognitive distortions (positive and negative) led to greater recourse to non-adaptive cognitive emotion regulation strategies, at the expense of adaptive strategies. These data are comparable to the results of studies of clinical populations with emotional disorders (Joormann & Stanton, 2016). Accordingly, our research hypothesis is validated. However, it would appear that the propensity to use non-adaptive strategies depends only on the presence of cognitive distortions in normal reasoning, whereas the use of adaptive strategies is modulated by the number and intensity of cognitive distortions. These observations show that the ability to consciously regulate emotional status is affected, along with mood, by the presence of errors of reasoning in cognitive information processing. The cognitive component of emotion regulation would therefore depend on the specific cognitive content of each individual (Kendal & Ingram, 1989).

Our results show that the cognitive distortions most associated with the use of adaptive cognitive emotion regulation strategies are positive dichotomous reasoning, minimization and positive neutral omission. Dichotomous reasoning is polarized reasoning, devoid of nuances. This is a cognitive distortion that leads the individual to perceive a reference class only according to the extreme taxa of each pole. Thus, preference is attributed to the extreme taxon of the corresponding pole. For example, a positively oriented person who was not hired following a job interview would think that they were too good for the job. Neutral omission leads the individual to ignore the neutral taxon of the reference class. This absence of neutrality leads the person to consider all possible neutral events as either positive or negative. In its positive orientation, the neutral omission is biased towards the corresponding pole and neutral events are thus seen as positive. The common point between these 2 cognitive distortions is that they direct the individuals' reasoning only to positive elements. The subjective interpretation of the situation on which the reasoning is based is erroneous because negative elements are not considered. Minimization is a cognitive distortion whereby an element of the reference class is assigned a lower taxon based on duality. Thus, negative events are considered less negative and positive events less positive. Reasoning is based on elements of the situation, whose emotional and intensity valence is subjectively attenuated. The presence of these different distortions in normal reasoning tends to explain the observed decrease in the use of adaptive cognitive emotion regulation strategies, which require objective consideration of all aspects (positive and negative) of an event, based on a well-functioning cognitive process of emotion regulation.

The cognitive distortion most associated with the use of non-adaptive cognitive emotion regulation strategies is negative arbitrary focus. Arbitrary focus leads to giving precedence to one of the taxa in the reference class by ignoring the others. In its negative orientation, negative arbitrary focus (or selective abstraction) leads the individual to consider the reference set only in terms of an event with a negative connotation. The individual's reasoning is then biased by that experience. For example, a person who received a fine in the past will expect to relive this negatively charged event every time they receive a letter. This reduction of the multiple elements of a situation to a single element with negative emotional

connotation leads the individual to construct an erroneous interpretation of the situation, and underlies the use of non-adaptive cognitive emotion regulation strategies. This type of reasoning centered on the negative aspects of a situation is found more commonly in depressive symptomatology (Ehring & Watkins, 2008).

Our results show that the cognitive process of emotion regulation is dependent on the individual's own cognitive processing. Our predictive models suggest that the preferred use of adaptive or non-adaptive cognitive emotion regulation strategies by a non-clinical young adult population is affected by the ability, underpinned by automatic thoughts, to focus reasoning on positive events and to minimize or even ignore negative events, while the use of non-adaptive strategies is linked to the tendency to make a negative and pessimistic judgment of events, underpinned by personal experience and cognitive patterns (Beck, 1964).

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